

# PATENT ABSTRACTS OF JAPAN

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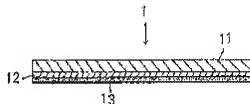
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## (54) TRANSFER FOIL AND IMAGE RECORDING MEDIUM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a transfer foil for easily forming a protective layer for satisfactorily preventing discoloring and fading due to a light by providing the protective layer on a plastic surface dyed with a sublimable dye to prevent chemical and mechanical damage of a dyed image, and to provide an image recording medium having a protective layer for satisfactorily preventing discoloring and fading due to a light by satisfactorily preventing chemical and mechanical damage of a dyed image with high performance.

**SOLUTION:** The transfer foil 1 comprises a release layer 12 easily releasable, and an adhesive layer 13 containing an ultraviolet absorbent sequentially laminated on a heat resistant base film 11 in such a manner that the layer 12 contains a thermoplastic resin and an abrasive-proofing agent so that the agent of 15 to 5 pts.wt. is contained to 85 to 95 pts.wt. of the resin. And, the image recording medium comprises an adhesive layer containing an ultraviolet absorbent and a protective layer sequentially laminated in this order on a support recorded with an image of a sublimable dye.



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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[The technical field to which an invention belongs] This invention relates to the image recording medium with which the protective layer which can prevent the tenebrescence and bleeding of a color was provided in the surface of the plastic material dyed with what is called a sublimability color in more detail about the image recording medium which was able to provide the protective layer.

[0002]

[Description of the Prior Art] The method of dyeing plastic material using what is called a sublimability color is common knowledge. For example, a color is ink-ized with binder resin and is printed on a temporary base material, and by heating this printed matter in piles to plastic material, only the color in ink permeates into plastic material, and dyes it (heat transfer printing). Under the present circumstances, ink is not transferred but a strip is carried out with a temporary base material.

[0003] Or after printing directly the ink containing a color on plastic material, it heats, and a color is made to permeate the inside of a plastic and is made to dye (osmosis print processes). Although an ink layer is made to remain as it is or a strip is carried out, in any case, the color has permeated the inside of a plastic, and a picture remains.

[0004] It is believed that a color is sublimability, it changes from a solid state to a gaseous state directly, and it is thought that this gas-like color permeates into plastic material. For this reason, generally the color is called the sublimability color. But it is not checked strictly that a liquid state does not exist between a solid state and a gaseous state. It is not clear whether osmosis in plastic material arises in a gaseous state or it produces in a liquid state. For this reason, a color may be called a volatility color or thermofusion transitional dye.

[0005] A heating board, a heating roller, an infrared panel heater, etc. are used for the heating method which makes a color permeate the inside of plastic material. It continued till recent years and the method of making the color on a transfer ribbon permeate into plastic material by generation of heat of a thermal head, and forming a picture by that the heat responsibility outstanding color was developed or improvement of a thermal head, was developed. Plastic material is a plastic film and vinyl chloride cards, such as an identification card.

[0006] However, generally a color is a disperse dye or an oil color. this color having small polarity, and associative strength with plastic material being also small, and being committed by a plasticizer, an organic medicine, etc., or scratching, while changing with heating to a gas easily for this reason and permeating into plastic material -- etc. -- it is easy to receive the mechanical damage to depend. a color is decomposed by light, especially ultraviolet rays further again -- discoloration -- or tenebrescence is carried out. In order to prevent this problem, a color is fixed, or the image receiving layer which uses polyester resin as the main ingredients is provided in the plastic material surface, a color is improved, and color fastness to light is improved.

[0007] However, by neither of the methods, from the outside intrinsically, or a mechanical damage cannot be prevented but beams of light, such as ultraviolet rays, can also be avoided.

[0008]

[Problem(s) to be Solved by the Invention]Then, when this invention provides a protective layer in the plastic surface dyed with this sublimability color, The transfer foil which can be formed is easily provided for the protective layer which is chemical as for a dyed image, and can prevent a mechanical damage well and can also prevent the tenebrescence by light well. And it aims at providing the image recording medium which has a protective layer which performance is high and is chemical as for a dyed image, and can prevent a mechanical damage well and can also prevent the tenebrescence by light well.

[0009]

[Means for Solving the Problem]In order to attain this purpose, an invention of claim 1, a heat-resistant base film top — exfoliation from this base film — easy stratum disjunctum. Transfer foil with which has laminated a glue line containing an ultraviolet ray absorbent one by one, as for this stratum disjunctum, thermoplastics and an antifriction agent are used, and this thermoplastics is characterized by this antifriction agent being 15 to 5 weight section to 85 to 95 weight section is provided.

[0010]An invention of claim 2 provides thermoplastics of said stratum disjunctum with said transfer foil, wherein either of the mixtures of polymethylmethacrylate, a nitrocellulose, or polymethylmethacrylate and a nitrocellulose is used.

[0011]And especially an invention of claim 3 provides said glue line with an ultraviolet ray absorbent and transfer foil with which not less than 50 \*\* thermoplastics is used for a glass transition point about claim 1 or transfer foil of 2 again.

[0012]And an invention of claim 4 provides an image recording medium, wherein an adhesives layer which contains an ultraviolet ray absorbent at least on this picture by having recorded a picture which used a sublimability color at least on one side of a base material, and a protective layer are laminated by this order. In order to form this glue line and protective layer on a base material, of course, it is also possible to form, for example by a transfer means using one transfer foil of claims 1 thru/or 3, but it is not necessarily limited to this transfer means, and means forming other than this may be adopted. For example, it can form also by sticking a thing of shielded state provided with a glue line and a protective layer on a base material, or carrying out coating of what paint-ized a constituent for glue lines, and the thing which paint-ized a constituent for protective layers to order on a base material, respectively.

[0013]And about the aforementioned image recording medium, an invention of claim 5 especially to said protective layer. An antifriction agent and thermoplastics are used and this thermoplastics provides an image recording medium which is a mixture of polymethylmethacrylate, a nitrocellulose, or polymethylmethacrylate and a nitrocellulose.

[0014]And especially an invention of claim 6 provides said glue line with an ultraviolet ray absorbent and an image recording medium with which not less than 50 \*\* thermoplastics is used for a glass transition point about an image recording medium of claim 4 or either of 5.

[0015]Furthermore, especially an invention of claim 7 about one image recording medium of claims 4 thru/or 6 said base material, It is either of the substrates which has a plastic material layer on at least a substrate which makes a plastic a charge of a principal member, or one side, and said picture provides an image recording medium currently recorded on a field of this plastic material.

[0016]Furthermore, an invention of claim 8 provides an image recording medium in which said especially base material is a card base material about one image recording medium of claims 4 thru/or 7.

[0017]An invention of claim 9 provides an image recording medium in which said especially base material is a sheet base material about one image recording medium of claims 4 thru/or 7.

[0018]An invention of claim 10 provides an image recording medium which is either of the pages which has filed said especially base material a cover of one of rear surfaces of a booklet object, or in a booklet about one image recording medium of claims 4 thru/or 7.

[Embodiment of the Invention]

[0019]The transfer foil (1) concerning this invention comprises a base film (11), stratum disjunctum (12), and a glue line (13) so that it may illustrate to Drawing 1. A base film (11) needs

the heat resistance which does not carry out softening modification with the heat and pressure at the time of transfer. This base film (11) is publicly known, for example, can use the 3-30-micrometer-thick polyethylene terephthalate film which carried out biaxial stretching. The stratum disjunctum (12) needs to exfoliate from a base film (11) easily at the time of hot printing. There is the necessity of achieving the function of the protective layer after being transferred. The function of a protective layer is a thing from the outside of the picture by a color for which chemical and a mechanical damage is prevented. In order to fill these both function, it solves by using the mixture of an antifriction agent and thermoplastics.

[0020] Thermoplastics prevents the penetration of a plasticizer or medicine and the crack depended for scratching is decreased. As this thermoplastics, the mixture of polymethylmethacrylate, a nitrocellulose, or polymethylmethacrylate and a nitrocellulose can be used, for example. Plasticizer-proof nature is excellent in existing thermoplastics, and a base film (11) and exfoliation are easy for a methylmethacrylate and a nitrocellulose. By using these resin for stratum disjunctum (12), when contacting an elasticity chloridation vinyl sheet, a plastic rubber, etc. on the picture after transfer, shift of the plasticizer contained in these can be prevented. Osmosis of medicine, such as acid, alkali, alcohol, and kerosene, can be prevented, and the influence on a picture can be prevented.

[0021] An antifriction agent is added for improvement in abrasion resistance or tolerance scratch nature. For example, Teflon powder, polyethylene powder, an animal system wax, Natural wax, such as a vegetable system wax, a mineral system wax, and a petroleum system wax, A synthetic hydrocarbon system wax, fatty alcohol and an acid system wax, fatty acid ester and a glycerite system wax, Metal salt of higher fatty acid, such as synthetic waxes, such as a hydrogenation wax, a synthetic ketone system wax, amine and an AMAIDO system wax, a chlorinated hydrocarbon system wax, a synthetic animal row system wax, and an alpha olefin system wax, and zinc stearate, etc. can be raised.

[0022] 15 - 5 weight section of thermoplastics is [ the material of the stratum disjunctum (12) concerning the transfer foil of this invention, or the protective layer (12) concerning an image recording medium / an antifriction agent ] preferred to 85 - 95 weight section. If the rate of thermoplastics exceeds 95 weight sections or there are few rates of an antifriction agent here than five weight sections, Since the problem that the tolerance (endurance to a mechanical damage) over wear, a scratch, etc. which are performance to give as a protective layer after being transferred at the transferred object side falls occurs, it is not desirable. On the other hand, there are few rates of thermoplastics than 85 weight sections, or if the rate of an antifriction agent exceeds 15 weight sections, in order for the solvent resistance which is performance to give as a protective layer too, heat resistance or the endurance to brittleness, etc. to fall, it is not desirable too. A  $1 - 3 \text{ g/m}^2$  grade may be sufficient as the coverage of stratum disjunctum (12).

[0023] In order to improve the piece at the time of transfer outside the above-mentioned ingredient to stratum disjunctum (12), an exfoliation improving agent is also mixable. For example, it is line saturated polyester resin. However, in mixing this exfoliation improving agent, the above-mentioned thermoplastics mixes optimum dose, after [ of thermoplastics or an antifriction agent ] reducing one of rates a little at least, although an antifriction agent makes 15 to 5 weight section a near standard to 85 to 95 weight section. Then, the rate of the exfoliation improving agent should be suppressed within three weight sections. If the rate of an exfoliation improving agent exceeds three weight sections, when it is going to form this protective layer by transfer from transfer foil. When it sees as a part of point which becomes that it is easy to be transferred too much easily, and protective layer which protects a picture, it is for the grade which spoils various kinds of tolerance which aforementioned thermoplastics and antifriction agent are mainly bearing to become too much remarkable, and to begin to interfere with solution of the technical problem of this invention.

[0024] It is desirable not to add other additives, for example, an ultraviolet ray absorbent etc., to stratum disjunctum (12). It is because invasion of a plasticizer becomes easy and causes modification of a picture by addition.

[0025]In order that the plastic material surface is pasted, and a glue line (13) may intercept ultraviolet rays, may prevent the tenebrescence of the picture by a color and may prevent promotion of invasion of a plasticizer, moreover, it is provided by plastic material from stratum disjunctum (12) separately from stratum disjunctum (12). The mixture of this reason to an ultraviolet ray absorbent and thermoplastics is comprised.

[0026]An ultraviolet ray absorbent prevents the tenebrescence of the color by light. That is, ultraviolet rays with a wavelength of 250-400 nm are absorbed, the energy is re-radiated as thermal energy harmless to a color, and the ultraviolet ray absorbent itself does not deteriorate at all. An ultraviolet ray absorbent with a maximal absorption wavelength of 250-400 nm is used from this reason.

[0027]For example, phenyl salicylate, p-tert-butylphenyl salicylate, Salicylic acid system ultraviolet ray absorbents, such as p-octyl phenyl salicylate, 2,4 - dihydroxybenzophenone, 2-hydroxybenzophenone, 2-hydroxy-4-octoxybenzophenone, 2-hydroxy-4-dodecyloxy benzophenone, 2,2 '-dihydroxy-4-methoxybenzophenone, 2,2 '-dihydroxy-44'-dimethoxybenzophenone, Benzophenone series ultraviolet ray absorbents, such as 2-hydroxy-4-methoxy-5-sulfobenzophenone, 2-(2'-hydroxy-5'-methylphenyl) benzotriazol, 2-(2'-hydroxy-5'-tert-butylphenyl) benzotriazol, 2-(2'-hydroxy-3'-tert-butyl-5'-methylphenyl) benzotriazol, Benzotriazol system ultraviolet ray absorbents, such as a 2-(2'-hydroxy-3' and 5'-JI tert-butylphenyl)-5-chlorobenzotriazole and 2-(2'-hydroxy-3' and 5'-JI tert-amyl phenyl) benzotriazol, They are cyanoacrylate system ultraviolet ray absorbents, such as 2-ethylhexyl 2-cyano 3,3 '-diphenyl acrylate and ethyl-2-cyano 3,3 '-diphenyl acrylate.

[0028]As for the thermoplastics used for a glue line (13), a glass transition point (T<sub>g</sub>) can use a not less than 50 °C thing. As thermoplastics used for a glue line (13), if the temperature of a glass transition point uses resin below 50 °C, the migration of a color will arise with this resin after transfer, and a blot of a picture will occur. As such thermoplastics, the thing of 110 °C or less of glass transition points is preferred. If a glass transition point uses resin over 110 °C, since load may not only be applied, but it may need a high temperature in the case of transfer and plastic material, such as a polyvinyl chloride card, may change into a transfer machine with heat, it is not desirable.

[0029]As thermoplastics used for a glue line (13), For example, VCM/PVC system resin, such as polyester, such as line saturated polyester, polyvinyl chloride, and VCM/PVC vinyl acetate copolymerization resin, Polyacrylic acid, polyacrylic acid-2-methoxy ethyl, poly(methyl acrylate), Polyacrylic acid-2-naphthyl, polyacrylic acid isobornyl, poly meta KURIRO methyl, Polyacrylonitrile, polymethylchloro acrylate, poly methyl methacrylate, Ethyl polymethacrylate, polymethacrylic acid-tert-butyl, isobutyl polymethacrylate, Acrylic resin, such as copolymerization resin of phenyl polymethacrylate, methyl methacrylate, and alkyl methacrylate (however, the carbon number of an alkyl group 2-6), It is vinyl system resin, such as polystyrene, polydivinylbenzene, polyvinyl benzene, styrene butadiene copolymerization resin, styrene, and alkyl methacrylate (however, the carbon number of an alkyl group 1-6), etc.

[0030]Thermoplastics of an ultraviolet ray absorbent is [ a glue line (13) / 50 - 10 weight section ] preferred to 50 - 90 weight section. 1 - 3 g/m<sup>2</sup> of coverage is preferred. When [ which has less thermoplastics than 50 weight sections / with more / thermoplastics / ultraviolet ray absorbents than 50 weight sections ] it becomes, since adhesive strength declines, it is not desirable in order to solve the technical problem of this invention. And there is more thermoplastics than 90 weight sections, and when an ultraviolet ray absorbent becomes less than ten weight sections, it is not desirable in order to solve the technical problem of this invention too from the effect of ultraviolet absorption decreasing.

[0031]First, transfer foil (1) paint-izes a stratum disjunctum constituent with a suitable solvent, carries out spreading desiccation of the paint on a base film (11) with coating methods, such as photogravure spreading, roll coating spreading, or bar coat spreading, subsequently, paint-izes an adhesion seat constituent and should just apply it. Paint-izing and the coating method of an adhesive composition are the same as paint-izing and the coating method of a stratum disjunctum constituent.

[0032]In this way, the transfer foil (1) obtained is put on the plastic material dyed with the sublimability color, after carrying out heat and pressure, can carry out the strip of the base film (11), and can transfer it. Transfer can be performed by heating to the temperature more than the softening temperature of fats and oils at the time of the thermoplasticity included in a glue line (13). Usually, about 150-250 °C of temperature may be [ this ] sufficient, and about 1 to 10 seconds may be sufficient as time.

[0033]The example at the time of using an identification card as plastic material is shown in Drawing 2. (2) is a card body and the mug shot is selectively dyed with the sublimability color (2a). This dyeing method is indicated on the JP,63-22693A gazette or the Heisei 1 patent-application No. 216576 specification, and the drawing. Probably, it will be clear that it is applicable to the arbitrary plastic material dyed not only with a card but with the sublimability color.

[0034]Since the picture for which the base material of the image recording medium concerning this invention used sublimation dye is recorded, only the portion at least which records the picture of sublimation dye should be provided with material with the color receptiveness over sublimation dye. That is, what is necessary is just to prepare the receiving layer for image recording for the place which records a picture using material with color receptiveness, even when the charge of a principal member of a base material presupposes that it was material without color receptiveness. For example, even if the material of the substrate of a base material is paper, metal (it is known that these do not have color receptiveness), or resin without color receptiveness, in the place which records a picture at least. What is necessary is to choose resin with color receptiveness suitably and just to prepare the receiving layer for the place on the substrate of a base material.

[0035]And the image recording medium concerning this invention may arrange layers other than these between a base material and a glue line or between a glue line and a protective layer. The layer which does so optical effects, such as a hologram and a diffraction grating, with layers other than these, for example — thin — they are the layer which gave the crest, the layer which recorded the image using special ink (ink which added suitably fluorescence material, infrared absorption material, or a magnetic material), etc. According to these, value can be added as an image recording medium which improved security nature or beautiful fanciness.

[0036]Incidentally an image recording medium, for example A credit card, a credit card issued by bank or its subsidiary, When it is an image recording medium which thinks of SEKIRITI nature which is represented by an ID card, a membership card, a license, or passbook much, the picture recorded on an image recording medium is the personal identification information of the mug shot of the regular owner of the image recording medium, or others of the owner in many cases. And it is not few also when a picture is recorded in this way by the image recording medium, and information with characters and signs, such as the owner's full name, an address, or affiliation, is also recorded on a base material (to except for a picture). in addition — the recording device in particular of information with these characters or signs is not what is limited — sublimation dye — or the recording material using paints etc. suitably may be used, for example, it may record, using suitably the means of thermal-ink-transfer-printing record, an ink jet, electro photography, or others.

[0037]Anyway, the image recording medium concerning this invention, It is useful also for improving the mechanical or chemical endurance of information with these characters and signs by being recorded not only the above pictures by sublimation dye but on a base material, and providing an aforementioned glue line and protective layer also on information with a character or a sign.

[0038]

[Example]

(Example 1)

Presentation polymethylmethacrylate of a stratum disjunctum paint Ten weight sections (Tg = 105 °C)

(The Mitsubishi Rayon make, BR-80)

Teflon powder 1 weight-section toluene / 2-butanone 40 weight sections (1/1)

[0039]

Presentation polyvinyl chloride acetate copolymer of a glue line paint Ten weight sections (Tg = 65 \*\*)

(Sekisui Chemical S REXX A)

2-(2'-hydroxy-5'-methylphenyl) benzotriazol 2.5 weight-section toluene / 2-butanone 40 weight sections (1/2)

[0040] On the 12-micrometer-thick biaxial-stretching polyethylene terephthalate film, the photogravure coating machine was used, spreading desiccation of the above-mentioned stratum disjunctum paint was carried out so that it might become dry weight <sup>2</sup> of 2.5g/m, and stratum disjunctum (12) was formed. On the layer, spreading desiccation of the above-mentioned glue line paint was carried out so that dry weight might become 2 g/m<sup>2</sup> by a photogravure coating machine, the glue line (13) was formed, and transfer foil was manufactured.

[0041] On the polyvinyl chloride card, the color thermal printer was used and transfer dyeing of each color of yellow, magenta, and cyanogen was carried out with the sublimation transfer ribbon. The above-mentioned transfer foil was laminated on 180 \*\* and the conditions for 2 seconds with the laminating machine (the Meiko Shokai MS pouch, H-140) in this dyeing side, and the base film was removed. A sublimation transfer ribbon is what applied the sublimability ink of three colors which comprise a color and a polyvinyl butyral on 6-micrometer-thick polyester film, As for the color of yellow, the color of Kayacet Red 026 (made by Nippon Kayaku) and cyanogen of the color of Kayacet Yellow AG (made by Nippon Kayaku) and magenta is HSB9 (made by Mitsubishi Kasei).

[0042]

(Example 2)

Presentation nitrocellulose of a stratum disjunctum paint Four weight sections (Daicel Chemical Industries make and cell line FM200)

Polymethylmethacrylate Six weight sections (Tg = 105 \*\*)

(Palaloid made from a sirloin and house, A-11)

Polyethylene powder 0.5 weight-section toluene / 2-butanone 40 weight sections (1/2)

[0043]

Presentation line saturated polyester resin of a glue line paint Ten weight sections (Tg = 65 \*\*)  
(The Unitika make, UE-3200)

2-hydroxy-4-methoxybenzophenone 6 weight-section toluene / 2-butanone 40 weight sections (1/1)

[0044] On the 12-micrometer-thick biaxial-stretching polyethylene terephthalate film, each above-mentioned paint was applied like Example 1, and transfer foil was manufactured. A card and transfer are the same as that of Example 1.

[0045] (Example 3) Tg = transfer foil was manufactured like Example 2 except having used Tg=47 \*\* saturated polyester resin instead of 65 \*\* saturated polyester. A card and transfer are the same as that of Example 1.

[0046] (Example 4) The outside which uses the stratum disjunctum which carried out the amount part addition of duplexes of the line saturated polyester resin (Toyobo Byran, 300) as an exfoliation improving agent manufactured transfer foil like Example 1 to total quantity 100 weight section of thermoplastics and an antifriction agent. A card and transfer are the same as that of Example 1.

[0047] (Comparative example 1) Transfer foil was not used but the dyed card itself was made into the comparative example 1.

[0048] (Comparative example 2) 2-(2'-hydroxy-5'-methylphenyl) benzotriazol which is an ultraviolet ray absorbent was removed, and also transfer foil was manufactured like Example 1. A card and transfer are the same as that of Example 1.

[0049]

(Comparative example 3)

Transfer layer paint composition polymethylmethacrylate Ten weight sections (the Mitsubishi Rayon make, BR-80)

Teflon powder 1 weight-section 2-(2'-hydroxy-5' methylphenyl) benzotriazol 4 weight-section toluene / 2-butanone 40 weight sections (2/1)

[0050]Spreading desiccation was carried out, the transfer layer was formed so that a photogravure coating machine might be used and it might become dry weight  $3.0 \text{ g/m}^2$  about the transfer layer paint of the above-mentioned presentation on 12-micrometer-thick biaxial extension polyester film, and transfer foil was manufactured.

[0051]A card and transfer are the same as that of Example 1. The scratch-proof nature of Examples 1-3 and the comparative examples 1-2, abrasion resistance, solvent resistance, heat resistance, and lightfastness are shown in Table 1.

[0052]

[Table 1]

		耐スクラッチ性	耐摩耗性	耐可塑性	耐溶剤性	耐熱性	耐光性 (%)		
							イエロー	マゼンタ	シアン
実施例	1	○	○	○	○	○	12	10	10
	2	○	○	○	○	○	24	12	23
	3	○	○	○	○	×	28	15	30
	4	○	○	○	○	○	12	10	10
比較例	5	×	×	×	×	×	70	40	60
	6	○	○	○	○	○	75	40	57
	7	○	○	×	×	△	15	7	12

[0053]Each data is examined in accordance with the following methods.

- Scratch-proof nature .... The surface is scratched using a pencil test machine with the pencil of H, and intensity is measured. It is that to which O and a crack were attached in that to which a crack is not attached x

- Abrasion resistance ..... A card face is rubbed 2000 times with a Gakushin-type fastness test machine (metal is used as a friction material), and a surface change is observed. It is what has O and change in a not changeful thing x

- Plasticizer-proof nature ..... An elasticity poly chloridation vinyl sheet is contacted to a card face, load  $200 \text{ g/m}^2$  is applied, it saves under the environment of 40 \*\* and 90%R.H for 24 hours, and change and tenebrescence of the color of a picture, a blot, etc. are observed. It is what has O, tenebrescence, and a blot in some not changing x

- Solvent resistance ..... Freon, ethanol, and gasoline are infiltrated into a cotton swab, a card face is rubbed, and change is observed. It is what changed that which is completely changeless also O and at once x

- Heat resistance ..... It saves under the environment of 50 \*\* and 90%R.H for 48 hours, and the tenebrescence of a picture is observed. It is what has O and tenebrescence in some which are not in change x

- Lightfastness ..... The percentage reduction of the reflection density of a picture is measured for ultraviolet rays after a 40-hour exposure with a fadeometer.

[0054]In Examples 1-4, the tenebrescence by the light of a picture is prevented and scratch-



proof nature, abrasion resistance, plasticizer-proof nature, solvent resistance, etc. can prevent chemical and a mechanical damage in some numbers so that clearly from this table. In Examples 1, 2, and 4, the plastic dyeing thing which the bleeding by heat does not produce in addition to this can be manufactured.

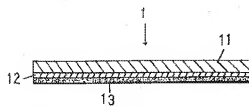
[0055]

[Effect of the Invention]As mentioned above, according to this invention, it transfers on the plastic material dyed with the sublimability color, and scratch-proof nature, abrasion resistance, plasticizer-proof nature, solvent resistance, etc. are acquired for chemical and the transfer foil which prevents a mechanical damage and prevents the tenebrescence by lights, such as ultraviolet rays, in some numbers. In addition, if the thermoplastics of not less than 50 \*\* of glass transition points is used for a glue line, the effect of not producing the image change by heat can be done so.

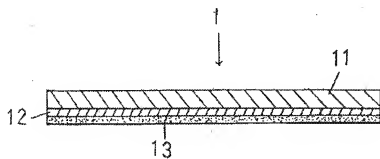
[0056]the picture (information for identification represented by the mug shot) of a sublimability color of various kinds of booklets represented by various kinds of cards represented by a credit card, ID card, etc. or a passbook, the passport, etc. — including, it becomes possible to protect \*\*\*\*\* recorded on the image recording medium with sufficient performance.

[Translation done.]

Drawing selection Representative drawing



[Translation done.]



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